

REMARKS/ARGUMENTS

Applicant would like to thank the Examiner for the careful consideration given the present application. The application has been carefully reviewed in light of the Office action, and the following remarks are presented for the Examiner's consideration.

Review of the subject application in view of the present remarks is respectfully requested.

Claims 1–8 were rejected under 35 U.S.C. 103(a) as being unpatentable in view of U.S. Patent No. 7,003,872 to Mimura et al. (hereinafter “Mimura”). For at least the following reasons, the Examiner's rejection is respectfully traversed.

Mimura discloses a controller 181 so that a retreat control for a second electronic component 122 is performed to a second component feeder 201 so as to avoid interference if a first electronic component 112 or a component holder 132 interferes with the second electronic component 122 of the second component feeder 201 because of movement of a mounting head 131 (abstract, FIG. 1). For avoiding interference, before the mounting head 131 passes over the tray 203, the tray 203 is retreated by the tray mover 220 through the control operation of the controller 181 to the second component feeder 201 to the vicinity of the body frame 211, preferably to a retreat position 125 in the body frame 211 along an incoming/outgoing direction 222 (col. 9, lines 28–32). This embodiment is configured to always move the tray 203 to the retreat position 125 when the mounting head 131 passes over the tray 203 arranged at the tray component feed position regardless of whether interference is present (col. 10, lines 38–41).

A first modification to the embodiment of Mimura discloses that the controller 181 has height information of second electronic components 122 on the tray 203, height information of first electronic components 112 held by component holders 132 and the number, shape and dimensions of component holders 132 attached to the mounting head 131 (col. 10, lns 44–62).

Based on such information, the controller 181 can determine the presence or absence of interference between at least one of the component holders 132 and the first electronic component 112 held by the component holder 132, and the second electronic components 122 on the tray 203 when the controller makes the mounting head 131 move.

A second modification to the embodiment of Mimura discloses that, when the interference is brought about at the time of the imaging operation, the controller 181 executes operation control to the tray mover 220 to move the tray 203 from the tray controller feed position 124 to the retreat position 125 before the component holder 132 is moved down above the image pick-up camera 161 after the first electronic component 112 is caught from the first component feeder (col. 11, lines 16–34).

A third modification to the embodiment of Mimura discloses that, when interference arises, the controller 181 performs operation control for the lift 134 thereby moving up the component holder 132 located at a normal position 135 to a holder retreat position 137 so that there is no interference (col. 11, line 58–col. 12, line 12).

In regard to claim 1, Mimura does not disclose a control means that “stores positions and heights of a plurality of said obstacles disposed between said component supply unit and said board.” The first modification of Mimura in particular differs in that the controller 181 does not store the positions of a plurality of obstacles. The control means of the present application stores information about the positions of the obstacles located between the component supply unit and the circuit board as shown in FIG. 3(a) (paragraph 0049). Moreover, Mimura does not disclose a control means that “then moves said nozzle to a height high enough not to interfere with a next one of said obstacles in sync with the time when said nozzle has finished passing over said first obstacle.” The third modification of Mimura contemplates only one holder retreat position 137

and there is no subsequent alteration of this position or height in response to passage of the first obstacle. The subject invention achieves higher production efficiency compared to Mimura. Therefore, Mimura fails to disclose all of the limitations recited in independent claim 1 and its dependent claims.

In regard to claim 3, Mimura does not disclose a control means that stores positions of a plurality of said obstacles as discussed in regard to claim 1. Moreover, Mimura does not disclose a control means that “determines a horizontal path to allow said nozzle to move to a component mounting position on said board while keeping a predetermined height, and moves said nozzle in said horizontal path.” The control means of Mimura does not store positions of obstacles and, thus, is not equipped with capabilities to determine a horizontal path, as shown in FIGS. 5 and 6 of the present application. Therefore, Mimura fails to disclose all of the limitations recited in independent claim 3 and its dependent claims.

In regard to claim 5, Mimura discloses a normal position 135 and a down position 136 which is a level where the component holders 132 are arranged when the component holders 132 are to hold electronic components 112 and 122 and to mount held electronic components 112 and 122 on the circuit board 152 (col. 12, lines 13–20). Mimura does not disclose a “component mounting region movement height close to said board when said nozzle has arrived in a component mounting region above said board” because it does not teach an alternative height in between normal position 135 and down position 136 for the mounting region above the board. Moreover, Mimura simply discloses that circuit boards 152 are carried in by the circuit board transfer device 151, held by the first circuit board transfer and hold unit 156 and the second circuit board transfer and holder unit 157, and positioned (col. 9, lines 11–14). As a result, Mimura does not contemplate the use of “board marks provided on end portion sides of said

board” and based on which “said component mounting region is calculated.” Therefore, Mimura fails to disclose all of the limitations recited in independent claim 5 and its dependent claims.

In light of the foregoing, it is respectfully submitted that the present application is in condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in condition for allowance, the Examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

If there are any additional fees resulting from this communication, please charge same to our Deposit Account No. 16-0820, our Order No. 38837.

Respectfully submitted,
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